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The Influence of the Covid-19 Pandemic on the Study of Macro-social Determinants of Population Health and Mortality

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SINCE ITS OUTBREAK in Wuhan, China, Covid 19 has spread rapidly throughout the world. According to WHO, the number of confirmed cases reached 76.3 million and deaths 1.7 million globally by December 22, 2020 (WHO 2020). Unlike the SARS epidemic that affected about 30 countries and territories between late 2002 and early 2004, this pandemic and its aftermath will be with us for years. As one of the largest public health crises in human history (Goldstein and Lee 2020), the Covid-19 pandemic has profoundly changed the world and the lives of billions of people. As demographers what have we learned up to the present, and what can we do to improve our research and contribute to the war against the pandemic and the enhancement of population health?

Demography as an academic discipline began with the study of mortality when John Graunt's *Natural and Political Observations Made upon the Bills of Mortality* was published in 1662. (The bills were used initially to track potential plague epidemics, and later to record deaths.) This exemplifies how the need to control infectious diseases and interest in understanding mortality led to the development of demography and related modern sciences (Graunt 1662; Kreager 2003; Rowland 2003).

The early development of demography was driven largely by the study of mortality. Since the late nineteenth century, increasing attention has been focused on studies of population growth, fertility, migration, urbanization, and population aging (Caldwell 2003). Progress has also been made in the investigation of mortality, especially its changes, age patterns, sex differentials, and cause structure, as well as increasing longevity. In examining causes of mortality decline and their variations, efforts have been made mainly in quantitative analysis of the influence of micro-level factors. Impacts of macro-social determinants of health and mortality have been overshadowed, although there are exceptions (Caldwell 1986; Galea 2007).

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Like Graunt's examination of the bills of mortality, the Covid-19 pandemic and the fight against it will greatly influence demographic research. They have, first of all, posed many new challenges and research questions. The urgent need to control the pandemic and its wide range of impacts have already become a powerful engine driving research development in many areas including demography. Furthermore, although it is a great tragedy in human history, the pandemic and especially the war against it have provided research opportunities that we have rarely seen before. This public health crisis has affected almost all countries and territories in the world, subject to the influence of varied natural environments and cultural traditions, as well as different social, economic, and political systems. Many governments have been heavily involved in controlling the pandemic and managing its damage and destruction. This new environment allows some crucial questions to be studied at an unprecedented scale. There have also been rapid developments in data collection and cross-discipline research collaborations. A flood of research on Covid-19-related topics has swept websites and journals (Else 2020, p. 553). With these in mind, I make some comments on the role of several macro-social determinants of population health in the fight against the pandemic and on how this may influence future development in demographic research.

Macro-social determinants of population health refer to social conditions that influence population health and mortality at the level of populations or large subpopulations. They include, for example, governance and government policy, social institutions and social structure, and social status of vulnerable populations (Galea 2007; WHO 2010). Impacts of macro-social determinants on population health and mortality are often indirect (in the sense they may not directly change people's health condition) and via (or through influencing) intermediate or intermediary determinants (Putman and Galea 2008; WHO 2010). Detailed examinations of influences of macro-social determinants have been limited in demography, partly due to the difficulty in quantifying them or disentangling them from other determinants.

A key macro-social determinant of health is governance, which is defined by the UN (UNDESA, UNDP and UNESCO 2012, p. 3) as "the exercise of political and administrative authority at all levels to manage a country's affairs. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences." The Covid-19 pandemic is an unprecedented test for governance throughout the world. Many national and local political and administrative authorities have made considerable efforts in managing the public health crisis. But outcomes have not been satisfactory in many countries. The spread of Covid-19 has not been contained since its first major outbreaks nearly a year ago. Many countries have now experienced

the second and even third wave of infection. The number of daily confirmed cases has reached a new high. Of course, the spread of the pandemic has been caused by many factors, especially those directly related to the asymptomatic infectiousness of the virus, and the limited effectiveness of prevention and control. Despite that, it is still important to ask the question of what role has been played by governance and other macro-social determinants.

There are significant variations in the effectiveness of controlling Covid-19 and some noteworthy experiences across populations. After it was struck severely by the first outbreak in Wuhan between January and March 2020, for example, China has by and large prevented another major surge in Covid-19 infection in a population of 1.4 billion (Leung et al. 2020; WHO 2020). This is confirmed by at least the following facts. First, hundreds of millions of Chinese traveled throughout the country during the May Day and National Day holiday periods, yet this was not followed by major outbreaks of new infection. Second, when China gradually reopened its universities after the pandemic was controlled, tens of millions of students returned to their classrooms and dormitories without a major increase in Covid-19 morbidity to date. In contrast, the number of confirmed cases continued to grow and reached more than 17.7 million in America between January 20 and December 22 (WHO 2020). Third, economic recovery in China has been speedy. In comparison with 2019, GDP increased by 0.7 percent in the first three quarters and 4.9 percent in the third quarter of 2020 (National Bureau of Statistics of China 2020).

The above discussion suggests a close link between governance and controlling the pandemic, but many questions about this link remain to be answered. For example, in countries struck by the second wave or suffering a prolonged outbreak, what is the extent to which these adverse developments are attributable to governance? What are the major obstacles that prevent more desirable governance from being achieved; for example, policies and strategies lacking scientific ground, indecisive or delayed actions, poor implementation of strategies, failure to obtain public support, or simply deficient resources and capacity? To systematically investigate these questions, we need more time and data. Diagnosing the underlying causes of different types of failure also requires cross-discipline collaboration. Demographers alone may not be able to answer all these questions, but they can make a major contribution.

Another macro-social determinant that is closely related to governance and demographic research is social institutions. They refer to clusters of behavioral rules governing “human actions and relationships in recurrent situations” (McNicoll 1994, p. 201), or “a complex, integrated set of social norms organized around the preservation of a basic societal value” (Sociology Guide 2020). Social institutions often vary across countries. One of their

essential features is their persistence, “generating a society’s distinctive patterns of social organizations and the texture of social life” (McNicol 1994, p. 201). They also help to define the rights and obligations of the government (or state) and citizens as well as their relationship in some societies. These make social institutions very relevant to the control of Covid-19 and efforts in improving population health.

Improving population health and mortality is largely about intervention. In addition to the development brought about by medical science and technology, this includes changing behavior or lifestyle by individuals and public health campaigns or programs launched by the government. When such actions are led or promoted by the government, what policy options are available and whether related intervention strategies can be implemented effectively are influenced strongly by social institutions. This is exactly what has been happening in the fight against Covid-19.

There were considerable debates on whether people should wear face masks when the Covid-19 infection started. Along with the worsening situation, the debates have also extended to whether border closures, curfews, or other stricter restrictions on social contacts and people’s activities are needed or acceptable. These disputes arise from not only people’s different knowledge about the necessity of these control measures or strategies, but also their contrasting views on whether the national government or local authority have the right or should be allowed to force people to accept them. Similarly, many governments have developed policies and plans to guide efforts against the pandemic, but there were considerable variations in their implementation across countries. Sometimes, similar policies and plans have led to very different results. These are at least partly attributable to the impact of varied social institutions and cultural traditions. Thus, tackling Covid-19 is not only about searching what is the most effective method to stop the spread of the virus, but more important, what is the most effective and acceptable way of controlling the infection in a particular population. Just as social institutions affected family planning and fertility changes (McNicol 1980 and 1994), the experience of fighting the pandemic confirms that institutional impacts of a similar nature also exist in improving population health and lowering mortality.

Since the beginning of 2020, close to 200 countries and territories have developed policies and strategies to control the spread of Covid-19. Their implementation has been documented and analyzed (Hale et al. 2020). These provide a unique opportunity for a further investigation into the questions discussed above. This could considerably enrich our knowledge about the impact of social institutions on policy intervention and improving population health.

A further major macro-social determinant of population health is the social status of vulnerable populations (or how they are treated in society).

In the current pandemic, vulnerable populations mainly refer to people who have had greater susceptibility to Covid-19 and experienced more serious health consequences after being infected than the population at large, although those prone to the loss of livelihood or with hardship of other kinds may also be considered as vulnerable. Their vulnerabilities arise for different reasons. For some people, the vulnerabilities are caused by their physiological, demographic, or occupational characteristics (e.g., certain health conditions, being old, or having close contact with infected people). For others, the vulnerabilities are closely related to social or economic characteristics (e.g., refugees, temporary migrant workers, people in poverty or belonging to certain ethnic groups), which may considerably affect their social status (Andrasfay and Goldman 2020; Sánchez-Páez 2020). Higher Covid-19 incidence and mortality have been observed in some subpopulations during the pandemic, especially in its early stage (Koh 2020; Sobotka et al. 2020; Steiber and Muttarak 2020). But these subpopulations and their vulnerability levels vary notably across countries: due to differences in the level of initial preparation for the outbreak of the pandemic, the speed with which vulnerabilities in certain subpopulations have been identified, or the extent to which enhanced protection has been provided to vulnerable populations. Failing to help vulnerable people to protect themselves will worsen the socioeconomic and health inequalities that had already existed in pre-pandemic times and jeopardize the control of Covid-19 in the entire population. Consequences of this kind may be less observable in countries with higher levels of social equality and good social protection systems, but could be devastating in places where millions of people live in slums or a large number of refugees or temporary migrant workers are socially disadvantaged. Accordingly, additional efforts in monitoring new epidemiological developments and identifying vulnerable populations, and in efficiently controlling the spread of Covid-19 among them are crucial steps in overcoming the pandemic and further improving population health.

As indicated by many studies, a huge amount of data has been gathered since the outbreak of Covid-19, but much has not yet been used for in-depth studies of the pandemic, especially for cross-country comparative analysis. This is primarily due to the fact that these data have often been collected by researchers from different disciplines for different purposes and through different procedures. The data (e.g., causes of death, cases of Covid-19) may be recorded according to different criteria or subjected to the influence of varying registration problems. They therefore need careful documentation, evaluation, standardization, harmonization, and perhaps a necessary adjustment before being used more effectively in producing more reliable results. This is another area in which demographers and their expertise can make a major contribution.

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